

PATENT ABSTRACTS OF JAPAN

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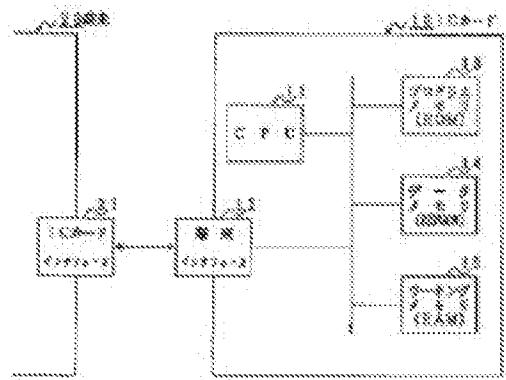
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(54) IC CARD AND ITS TRANSACTION PROCESSING METHOD

(57)Abstract:

PROBLEM TO BE SOLVED: To prevent the illegal use of an IC card and the illegal drawing of electronic money by setting a flag without fail before unlocking, releasing the flag after setting locking and setting locking in a case when the flag is previously set.

SOLUTION: The IC card 10 compares a password sent from a customer and a password previously registered in a data memory 14 and when the passwords are coincident with each other, the flag setting means of CPU 11 sets the flag 1 in the memory 14 by setting or clearing. Continually, the IC card 10 unlocks the locking by the unlocking means of CPU 11. Then, after unlocking, the IC card 10 executes prescribed processing by the processing means of CPU 11. Continually, after setting locking by the locking setting means of CPU 11, the IC card 10 releases the flag 1 by clearing or setting by the flag releasing means of CPU 11.



CLAIMS

[Claim(s)]

[Claim 1]An IC card comprising:

- (a) A flag setting means which sets up a flag formed in an inside when a command is sent from a terminal.
- (b) A lock release means of which a lock is canceled where the aforementioned flag is set up.
- (c) A processing means to perform predetermined processing where the aforementioned lock is canceled.
- (d) The 1st lock setting-out means that sets up a lock after the aforementioned processing is completed.
- (e) A flag release means of which the aforementioned flag is canceled after the aforementioned lock is set up.
- (f) The 2nd lock setting-out means that sets up a lock when a flag is set up beforehand.

[Claim 2]The IC card according to claim 1 to which release of a lock by the aforementioned lock release means, predetermined processing by the aforementioned processing means, and setting out of a lock by said 1st lock setting-out means are exclusively performed in a series of operations based on one command from the aforementioned terminal.

[Claim 3]The IC card according to claim 1 which performs the aforementioned processing when conditions which can be operated that the aforementioned processing means was set up beforehand are fulfilled.

[Claim 4](a) When a command is sent to an IC card from a terminal, a flag formed in an inside of an IC card is set up, (b) Where it canceled Locke of an IC card where a flag is set up, and (c) Locke is canceled, perform predetermined processing, (d) while canceling the aforementioned flag after it sets up Locke of an IC card after processing was completed, and (e) this lock is set up -- (f) -- a transaction processing method of an IC card characterized by setting Locke to an IC card when the aforementioned flag is set up beforehand.

DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention]This invention relates to an IC card and the transaction processing method for the same.

[0002]

[Description of the Prior Art]Conventionally, the IC card with which electronic money was filled up (*****) is used by the prepaid system or a postpaid system at a store etc. In that case, for example, a customer or a salesclerk inserts an IC card in insertion and the drawer mouth of the terminal for electronic money installed in the store, and if a salesclerk operates the aforementioned terminal and inputs amount of payment, amount of payment will be displayed on the display of a terminal.

[0003]And if a salesclerk asks a customer for the check of amount of payment and a customer presses for example, the "YES" key, the payment processing as transaction processing is

started between a terminal and an IC card, and the electronic money of the part equivalent to amount of payment will be pulled out from an IC card, and will be received by the terminal. Then, if it is displayed on the aforementioned display that payment processing was completed, a customer or a salesclerk will draw out an IC card from insertion and the drawer mouth of a terminal.

[0004]Next, the payment processing of the aforementioned IC card is explained. Drawing 2 is a flow chart which shows the payment processing method of the conventional IC card. First, if a terminal sends a command to an IC card and asks the locked position of an IC card, this IC card will answer a terminal in a locked position. At this time, a terminal judges whether Locke is set up in the IC card based on the response from the aforementioned IC card.

[0005]By the way, electronic money cannot be pulled out when Locke is set up in the IC card. Then, the aforementioned terminal displays on a display that Locke is set up, and urges it to a customer that the password for canceling Locke is inputted. On the other hand, if a customer inputs a password, a terminal will send a password to an IC card and will require it as canceling Locke.

[0006]Then, if an IC card compares the sent password with the password beforehand registered into the data memory to build in and both its passwords correspond, it will cancel Locke. Next, a terminal sends the amount of a drawer to an IC card, and requires the cash drawer of the electronic money in an IC card. And an IC card pulls out the demanded electronic money and pays a terminal. Thus, if electronic money is pulled out from an IC card, a terminal will be required as setting Locke to an IC card, and this IC card will set up Locke according to the demand from a terminal.

[0007]When the lock is not set up in the IC card, a terminal sends the amount of a drawer to an IC card, and requires the cash drawer of the electronic money in an IC card. And an IC card pulls out the demanded electronic money and pays a terminal. Next, a flow chart is explained.

Step S1 A terminal asks the locked position of an IC card.

Step S2 IC card answers a terminal in a locked position.

Step S3 A terminal judges whether the lock is set up in the IC card. When the lock is set up and the lock is not set to step S4, it progresses to Step S8.

Step S4 A password is inputted.

Step S5 A terminal is required as canceling a lock of an IC card.

Step S6 IC card judges whether the sent password and the password beforehand registered into data memory are in agreement. When a password is in agreement, it progresses to Step S7, and processing is ended when not in agreement.

Step S7 IC card cancels a lock.

Step S8 A terminal requires the cash drawer of the electronic money in an IC card.

A step S9 IC card pulls out the demanded electronic money.

Step S10 A terminal is required as setting Locke to an IC card.

Step S11 IC card sets up Locke.

[0008]

[Problem to be solved by the invention]However, in the aforementioned conventional IC card, if an IC card is unjustly used when an IC card is wrested, where Locke is canceled during payment processing, electronic money will be pulled out unjustly. The problem of the

aforementioned conventional IC card is solved, an IC card is not used unjustly, and this invention aims to let electronic money provide an IC card which is not pulled out unjustly and the transaction processing method for the same.

[0009]

[Means for solving problem]Therefore, in the IC card of this invention, The flag setting means which sets up the flag formed in the inside when a command is sent from a terminal, The lock release means from which Locke is released where the aforementioned flag is set up, A processing means to perform predetermined processing where aforementioned Locke is canceled, and the 1st Locke setting-out means that sets up Locke after the aforementioned processing is completed, It has a flag release means of which the aforementioned flag is canceled after aforementioned Locke is set up, and the 2nd Locke setting-out means that sets up Locke when the flag is set up beforehand.

[0010]In the transaction processing method of the IC card of this invention, When a command is sent to an IC card from a terminal, the flag formed in the inside of an IC card is set up, Where it canceled the lock of the IC card where a flag is set up, and a lock is canceled, predetermined processing is performed, after processing is completed, the lock of an IC card is set up, and the aforementioned flag is canceled after this lock is set up.

[0011]And when the aforementioned flag is set up beforehand, a lock is set to an IC card.

[0012]

[Mode for carrying out the invention]Hereafter, it explains in detail, referring to Drawings for an embodiment of the invention. Drawing 3 is a block diagram showing the transaction processing equipment of the IC card in a 1st embodiment of this invention. CPU by which 10 performs an IC card and 11 controls this IC card 10 in a figure, The terminal interface in which 12 performs an interface with the terminal 20, the program memory (ROM) in which 13 stores a control program, A working memory (RAM) for the data memory (E2PROM) of the data fixity in which, as for 14, data is stored, and 15 to operate aforementioned IC card 10, and 21 are IC card interfaces which perform an interface with aforementioned IC card 10. Transaction processing equipment is constituted by IC card 10 and the terminal 20.

[0013]Next, the payment processing as transaction processing of aforementioned IC card 10 is explained. Drawing 1 is a flow chart which shows the payment processing method of the IC card in a 1st embodiment of this invention. First, the terminal 20 (drawing 3) is performed to the display which does not have a predetermined display illustrated, and is urged to a customer that the password for canceling a lock is inputted. On the other hand, if a customer inputs a password, the terminal 20 sends a password to IC card 10, will send the amount of a drawer to IC card 10, and will require the cash drawer of the electronic money in IC card 10, and setting out of a lock while requiring that one predetermined command should cancel a lock.

[0014]Then, if IC card 10 compares the sent password with the password beforehand registered into the aforementioned data memory 14 and both its passwords correspond, it will be set up by setting or clearing the flag 1 in the data memory 14 by the flag setting means by which CPU11 is not illustrated. In this embodiment, the aforementioned flag setting means sets the flag 1. Then, aforementioned IC card 10 cancels a lock by the lock release means by which CPU11 is not illustrated.

[0015]When both passwords are not in agreement, IC card 10 refuses each aforementioned

demand, and ends payment processing. And IC card 10 performs predetermined processing by a processing means by which CPU11 is not illustrated, after canceling a lock. In this embodiment, the aforementioned processing means pulls out the demanded electronic money. Then, after IC card 10 sets up a lock by 1st lock setting-out means by which CPU11 is not illustrated, the Flagg release means by which CPU11 is not illustrated cancels it by clearing or setting aforementioned Flagg 1. In this embodiment, the aforementioned Flagg release means clears aforementioned Flagg 1.

[0016]Next, a flow chart is explained.

Step S21 A password is inputted.

Step S22 The terminal 20 sends a password to IC card 10, and requires release of a lock, the cash drawer of electronic money, and setting out of a lock.

Step S23 IC card 10 judges whether the sent password and the password beforehand registered into the data memory 14 are in agreement. When a password is in agreement, it progresses to Step S24, and processing is ended when not in agreement.

Step S24 Flagg 1 is set.

Step S25 IC card 10 cancels Locke.

Step S26 IC card 10 pulls out the demanded electronic money.

Step S27 IC card 10 sets up Locke.

Step S28 The flag 1 is cleared.

[0017]Next, the initializing operation of IC card 10 is explained. Drawing 4 is a flow chart which shows the initializing operation of the IC card in a 1st embodiment of this invention. First, IC card 10 (drawing 3) checks the flag 1 in the data memory 14, and judges whether the flag 1 is set. And when the aforementioned flag 1 is cleared as for IC card 10, When initializing operation is then continued and the flag 1 is set, after setting up Locke by 2nd Locke setting-out means by which CPU11 is not illustrated, the aforementioned flag 1 is cleared and initializing operation is continued as it is.

[0018]Next, a flow chart is explained.

Step S31 It is judged whether Flagg 1 is set. When Flagg 1 is set and Flagg 1 is cleared by Step S32, it progresses to Step S34.

Step S32 Locke is set up.

Step S33 Flagg 1 is cleared.

Step S34 Initializing operation is continued.

[0019]Thus, in this embodiment, one command is only sent to IC card 10, and IC card 10, Since a series of operations which comprise release of Locke, the cash drawer of electronic money, and setting out of Locke are performed exclusively, it becomes difficult to send other commands to the meantime at IC card 10. Therefore, it is lost that IC card 10 is unjustly used where Locke is canceled, and electronic money is not pulled out unjustly.

[0020]While Flagg 1 is cleared after Flagg 1 is certainly set and Locke is set up in IC card 10 before canceling Locke, Since Locke is set up when IC card 10 checks Flagg 1 and Flagg 1 is set at the time of initializing operation, Since Flagg 1 is set even if it is going to use an IC card unjustly when IC card 10 is wrested where Locke is canceled during payment processing, at the time of initializing operation, IC card 10 will set up Locke itself. Therefore, IC card 10 is not used unjustly and electronic money is not pulled out unjustly.

[0021]Although a series of operations which comprise release of Locke, the cash drawer of

electronic money, and setting out of Locke are exclusively performed in this embodiment based on one command. Each operation of release of Locke, the cash drawer of electronic money, and setting out of Locke can also be performed based on a separate command. When IC card 10 checks the flag 1 at the time of initializing operation and this flag 1 is set, set up Locke, but, Locke can also be set up, when a command is sent from the terminal 20, the aforementioned flag 1 is checked and this flag 1 is set, before executing a command.

[0022]Next, a 2nd embodiment of this invention is described. About what has the same structure as a 1st embodiment, the explanation is omitted by giving the same mark. The 1st flow chart and drawing 6 in which the payment processing method of an IC card [in / in drawing 5 / a 2nd embodiment of this invention] is shown are the 2nd flow chart that shows the payment processing method of the IC card in a 2nd embodiment of this invention.

[0023]First, the terminal 20 (drawing 3) is performed to the display which does not have a predetermined display illustrated, and is urged to a customer that the password for canceling a lock is inputted. On the other hand, if a customer inputs a password, the terminal 20 will send a password to IC card 10, and will require it as a predetermined command canceling a lock. At this time, for example the maximum of the number of times of a drawer is set up at once, it sets the maximum of the amount of a private account as this amount of a drawer, and the terminal 20 sends it to IC card 10. The conditions which can be operated are constituted by each maximum of the aforementioned number of times of a drawer, and the amount of a private account in this embodiment.

[0024]By next, the flag setting means for which CPU11 will not be illustrated if IC card 10 compares the sent password with the password beforehand registered into the aforementioned data memory 14 and both its passwords correspond, While setting up by setting or clearing the flag 2 in the data memory 14, the lock release means which sets each maximum of the number of times of a drawer and the amount of a private account sent from the terminal 20 as the data memory 14 then by which CPU11 is not illustrated cancels a lock. In this embodiment, the aforementioned flag setting means sets the flag 2.

[0025]When both passwords are not in agreement, IC card 10 refuses the demand of a purport which cancels Locke, and ends payment processing. Next, the terminal 20 sends the amount of a drawer to IC card 10, and requires the cash drawer of the electronic money in IC card 10. On the other hand, IC card 10 judges whether each maximum of the aforementioned number of times of a drawer and the amount of a private account is checked, and the aforementioned conditions which can be operated are fulfilled, when the flag 2 is checked and the flag 2 is set. And when the aforementioned conditions which can be operated are fulfilled, the maximum of the number of times of a drawer is larger than zero, When the amount of a private account is below the maximum, after updating each maximum of the number of times of a drawer, and the amount of a private account, and only 1 subtracting the maximum of the number of times of a drawer and subtracting the maximum of the amount of a private account by this amount of a private account, a processing means by which CPU11 is not illustrated performs predetermined processing. In this embodiment, the aforementioned processing means pulls out the demanded electronic money.

[0026]And when the aforementioned flag 2 is cleared, the demanded electronic money is pulled out. A drawer error is answered when the aforementioned conditions which can be operated are not fulfilled (i.e., when the number of times of a drawer is 0 and the amount of a

private account is larger than the maximum). And if electronic money can be normally pulled out from IC card 10, the terminal 20 will be required as setting Locke to IC card 10. Then, after IC card 10 sets up Locke by 1st Locke setting-out means by which CPU11 is not illustrated, the flag release means by which CPU11 is not illustrated cancels it by clearing or setting the aforementioned flag 2. In this embodiment, the aforementioned flag release means clears the aforementioned flag 2.

[0027]Next, a flow chart is explained.

Step S41 A password is inputted.

Step S42 The terminal 20 is required as canceling Locke of IC card 10.

Step S43 IC card 10 judges whether the sent password and the password beforehand registered into the data memory 14 are in agreement. When a password is in agreement, it progresses to Step S44, and processing is ended when not in agreement.

Step S44 The flag 2 is set and the maximum of the number of times of a drawer and the amount of a private account is set up.

Step S45 IC card 10 cancels Locke.

Step S46 The terminal 20 is required as pulling out electronic money of IC card 10.

Step S47 IC card 10 checks the flag 2, and it is judged whether the flag 2 is set. When the flag 2 is set and the flag 2 is not set to Step S48, it progresses to Step S50.

Step S48 IC card 10 has the maximum of the number of times of a drawer larger than zero, and it is judged whether the amount of a private account is below the maximum. The maximum of the number of times of a drawer is larger than zero, and when the amount of a private account is below the maximum, and that is not right to Step S49, it progresses to it at Step S51.

The maximum of the number of times of a drawer and the amount of a private account is updated, only 1 subtracts the maximum of the number of times of a drawer, and step S49 IC card 10 subtracts the maximum of the amount of a private account by this amount of a private account.

Step S50 IC card 10 pulls out the demanded electronic money.

Step S51 A drawer error is answered.

Step S52 The terminal 20 is required as setting Locke to IC card 10.

Step S53 IC card 10 sets up Locke.

Step S54 The flag 2 is cleared.

[0028]Thus, in this embodiment, in IC card 10, while the maximum of the number of times of a drawer and the amount of a private account is set up before canceling Locke, the maximum is updated in connection with the cash drawer of electronic money. Therefore, when IC card 10 is wrested where Locke is canceled during payment processing, even if it is going to use an IC card unjustly, Since the demand of the cash drawer of electronic money will be refused if the amount of a private account consists [whether the number of times of a drawer is set to 0, and] of the maximums, IC card 10 is not used unjustly and electronic money is not pulled out unjustly.

[0029]If release of Locke is required, will set up the maximum of the number of times of a drawer at once, and will set the maximum of the amount of a private account as this amount of a drawer, but IC card 10. Another command is generated in the terminal 20 and the original of the maximum of the arbitrary number of times of a drawer and the maximum of

the amount of a private account can also be sent to IC card 10 by this command. In that case, when the original of the aforementioned maximum is stored in the data memory 14 and Locke is canceled, IC card 10 can copy the original of the maximum stored in the data memory 14 to the field for a check, and can also use the original of the copied maximum.

[0030]In each aforementioned embodiment, although the IC card with which electronic money was filled up is explained, it is also applicable to other IC cards. This invention is not limited to the aforementioned embodiment, and it is possible to make it change variously based on the meaning of this invention, and it does not eliminate them from the range of this invention.

[0031]

[Effect of the Invention]In [according to / as explained to details above / this invention] an IC card, The flag setting means which sets up Flagg formed in the inside when a command is sent from a terminal, The lock release means of which a lock is canceled where aforementioned Flagg is set up, A processing means to perform predetermined processing where the aforementioned lock is canceled, and the 1st lock setting-out means that sets up a lock after the aforementioned processing is completed, It has the Flagg release means from which aforementioned Flagg is released after the aforementioned lock is set up, and the 2nd lock setting-out means that sets up a lock when Flagg is set up beforehand.

[0032]In this case, in an IC card, when Flagg is certainly set up, and Flagg is beforehand set up while Flagg is canceled after a lock is set up before canceling a lock, a lock is set up. Therefore, since Flagg is set even if it is going to use an IC card unjustly when an IC card is wrested where a lock is canceled during processing, an IC card will set up a lock itself. Therefore, an IC card is not used unjustly and electronic money is not pulled out unjustly.

TECHNICAL FIELD

[Field of the Invention]This invention relates to an IC card and the transaction processing method for the same.

PRIOR ART

[Description of the Prior Art]Conventionally, the IC card with which electronic money was filled up (*****) is used by the prepaid system or a postpaid system at a store etc. In that case, for example, a customer or a salesclerk inserts an IC card in insertion and the drawer mouth of the terminal for electronic money installed in the store, and if a salesclerk operates the aforementioned terminal and inputs amount of payment, amount of payment will be displayed on the display of a terminal.

[0003]And if a salesclerk asks a customer for the check of amount of payment and a customer presses for example, the "YES" key, the payment processing as transaction processing is started between a terminal and an IC card, and the electronic money of the part equivalent to amount of payment will be pulled out from an IC card, and will be received by the terminal. Then, if it is displayed on the aforementioned display that payment processing was completed, a customer or a salesclerk will draw out an IC card from insertion and the drawer

mouth of a terminal.

[0004]Next, the payment processing of the aforementioned IC card is explained. Drawing 2 is a flow chart which shows the payment processing method of the conventional IC card. First, if a terminal sends a command to an IC card and asks the locked position of an IC card, this IC card will answer a terminal in a locked position. At this time, a terminal judges whether Locke is set up in the IC card based on the response from the aforementioned IC card.

[0005]By the way, electronic money cannot be pulled out when Locke is set up in the IC card. Then, the aforementioned terminal displays on a display that Locke is set up, and urges it to a customer that the password for canceling Locke is inputted. On the other hand, if a customer inputs a password, a terminal will send a password to an IC card and will require it as canceling Locke.

[0006]Then, if an IC card compares the sent password with the password beforehand registered into the data memory to build in and both its passwords correspond, it will cancel Locke. Next, a terminal sends the amount of a drawer to an IC card, and requires the cash drawer of the electronic money in an IC card. And an IC card pulls out the demanded electronic money and pays a terminal. Thus, if electronic money is pulled out from an IC card, a terminal will be required as setting Locke to an IC card, and this IC card will set up Locke according to the demand from a terminal.

[0007]When the lock is not set up in the IC card, a terminal sends the amount of a drawer to an IC card, and requires the cash drawer of the electronic money in an IC card. And an IC card pulls out the demanded electronic money and pays a terminal. Next, a flow chart is explained.

Step S1 A terminal asks the locked position of an IC card.

Step S2 IC card answers a terminal in a locked position.

Step S3 A terminal judges whether the lock is set up in the IC card. When the lock is set up and the lock is not set to step S4, it progresses to Step S8.

Step S4 A password is inputted.

Step S5 A terminal is required as canceling a lock of an IC card.

Step S6 IC card judges whether the sent password and the password beforehand registered into data memory are in agreement. When a password is in agreement, it progresses to Step S7, and processing is ended when not in agreement.

Step S7 IC card cancels a lock.

Step S8 A terminal requires the cash drawer of the electronic money in an IC card.

A step S9 IC card pulls out the demanded electronic money.

Step S10 A terminal is required as setting Locke to an IC card.

Step S11 IC card sets up Locke.

EFFECT OF THE INVENTION

[Effect of the Invention]In [according to / as explained to details above / this invention] an IC card, The flag setting means which sets up the flag formed in the inside when a command is sent from a terminal, The lock release means from which Locke is released where the aforementioned flag is set up, A processing means to perform predetermined processing where aforementioned Locke is canceled, and the 1st Locke setting-out means that sets up

Locke after the aforementioned processing is completed, It has a flag release means of which the aforementioned flag is canceled after aforementioned Locke is set up, and the 2nd Locke setting-out means that sets up Locke when the flag is set up beforehand.

[0032]In this case, in an IC card, when a flag is certainly set up, and the flag is beforehand set up while a flag is canceled after Locke is set up before canceling Locke, Locke is set up. Therefore, since the flag is set even if it is going to use an IC card unjustly when an IC card is wrested where Locke is canceled during processing, an IC card will set up Locke itself. Therefore, an IC card is not used unjustly and electronic money is not pulled out unjustly

TECHNICAL PROBLEM

[Problem to be solved by the invention]However, in the aforementioned conventional IC card, if an IC card is unjustly used when an IC card is wrested, where Locke is canceled during payment processing, electronic money will be pulled out unjustly. The problem of the aforementioned conventional IC card is solved, an IC card is not used unjustly, and this invention aims to let electronic money provide an IC card which is not pulled out unjustly and the transaction processing method for the same.

MEANS

[Means for solving problem]Therefore, in the IC card of this invention, The flag setting means which sets up the flag formed in the inside when a command is sent from a terminal, The lock release means from which Locke is released where the aforementioned flag is set up, A processing means to perform predetermined processing where aforementioned Locke is canceled, and the 1st Locke setting-out means that sets up Locke after the aforementioned processing is completed, It has a flag release means of which the aforementioned flag is canceled after aforementioned Locke is set up, and the 2nd Locke setting-out means that sets up Locke when the flag is set up beforehand.

[0010]In the transaction processing method of the IC card of this invention, When a command is sent to an IC card from a terminal, the flag formed in the inside of an IC card is set up, Where it canceled Locke of the IC card where a flag is set up, and Locke is canceled, predetermined processing is performed, after processing is completed, Locke of an IC card is set up, and the aforementioned flag is canceled after this lock is set up.

[0011]And when aforementioned Flagg is set up beforehand, Locke is set to an IC card.

[0012]

[Mode for carrying out the invention]Hereafter, it explains in detail, referring to Drawings for an embodiment of the invention. Drawing 3 is a block diagram showing the transaction processing equipment of the IC card in a 1st embodiment of this invention. CPU by which 10 performs an IC card and 11 controls this IC card 10 in a figure, The terminal interface in which 12 performs an interface with the terminal 20, the program memory (ROM) in which 13 stores a control program, A working memory (RAM) for the data memory (E2PROM) of the data fixity in which, as for 14, data is stored, and 15 to operate aforementioned IC card

10, and 21 are IC card interfaces which perform an interface with aforementioned IC card 10. Transaction processing equipment is constituted by IC card 10 and the terminal 20.

[0013]Next, the payment processing as transaction processing of aforementioned IC card 10 is explained. Drawing 1 is a flow chart which shows the payment processing method of the IC card in a 1st embodiment of this invention. First, the terminal 20 (drawing 3) is performed to the display which does not have a predetermined display illustrated, and is urged to a customer that the password for canceling Locke is inputted. On the other hand, if a customer inputs a password, the terminal 20 sends a password to IC card 10, will send the amount of a drawer to IC card 10, and will require the cash drawer of the electronic money in IC card 10, and setting out of Locke while requiring that one predetermined command should cancel Locke.

[0014]Then, if IC card 10 compares the sent password with the password beforehand registered into the aforementioned data memory 14 and both its passwords correspond, it will be set up by setting or clearing Flagg 1 in the data memory 14 by the flag setting means by which CPU11 is not illustrated. In this embodiment, the aforementioned flag setting means sets Flagg 1. Then, aforementioned IC card 10 cancels Locke by the lock release means by which CPU11 is not illustrated.

[0015]When both passwords are not in agreement, IC card 10 refuses each aforementioned demand, and ends payment processing. And IC card 10 performs predetermined processing by a processing means by which CPU11 is not illustrated, after canceling Locke. In this embodiment, the aforementioned processing means pulls out the demanded electronic money. Then, after IC card 10 sets up Locke by 1st Locke setting-out means by which CPU11 is not illustrated, the Flagg release means by which CPU11 is not illustrated cancels it by clearing or setting aforementioned Flagg 1. In this embodiment, the aforementioned Flagg release means clears aforementioned Flagg 1.

[0016]Next, a flow chart is explained.

Step S21 A password is inputted.

Step S22 The terminal 20 sends a password to IC card 10, and requires release of a lock, the cash drawer of electronic money, and setting out of a lock.

Step S23 IC card 10 judges whether the sent password and the password beforehand registered into the data memory 14 are in agreement. When a password is in agreement, it progresses to Step S24, and processing is ended when not in agreement.

Step S24 Flagg 1 is set.

Step S25 IC card 10 cancels a lock.

Step S26 IC card 10 pulls out the demanded electronic money.

Step S27 IC card 10 sets up a lock.

Step S28 Flagg 1 is cleared.

[0017]Next, the initializing operation of IC card 10 is explained. Drawing 4 is a flow chart which shows the initializing operation of the IC card in a 1st embodiment of this invention. First, IC card 10 (drawing 3) checks Flagg 1 in the data memory 14, and judges whether Flagg 1 is set. And when aforementioned Flagg 1 is cleared as for IC card 10, When initializing operation is then continued and Flagg 1 is set, after setting up a lock by 2nd lock setting-out means by which CPU11 is not illustrated, aforementioned Flagg 1 is cleared and initializing operation is continued as it is.

[0018]Next, a flow chart is explained.

Step S31 It is judged whether the flag 1 is set. When the flag 1 is set and the flag 1 is cleared by Step S32, it progresses to Step S34.

Step S32 Locke is set up.

Step S33 The flag 1 is cleared.

Step S34 Initializing operation is continued.

[0019]Thus, in this embodiment, one command is only sent to IC card 10, and IC card 10, Since a series of operations which comprise release of Locke, the cash drawer of electronic money, and setting out of Locke are performed exclusively, it becomes difficult to send other commands to the meantime at IC card 10. Therefore, it is lost that IC card 10 is unjustly used where Locke is canceled, and electronic money is not pulled out unjustly.

[0020]While the flag 1 is cleared after the flag 1 is certainly set and Locke is set up in IC card 10 before canceling Locke, Since Locke is set up when IC card 10 checks the flag 1 and the flag 1 is set at the time of initializing operation, Since the flag 1 is set even if it is going to use an IC card unjustly when IC card 10 is wrested where Locke is canceled during payment processing, at the time of initializing operation, IC card 10 will set up Locke itself. Therefore, IC card 10 is not used unjustly and electronic money is not pulled out unjustly.

[0021]Although a series of operations which comprise release of a lock, the cash drawer of electronic money, and setting out of a lock are exclusively performed in this embodiment based on one command, Each operation of release of a lock, the cash drawer of electronic money, and setting out of a lock can also be performed based on a separate command. When IC card 10 checks Flagg 1 at the time of initializing operation and this flag 1 is set, set up a lock, but. A lock can also be set up, when a command is sent from the terminal 20, aforementioned Flagg 1 is checked and this flag 1 is set, before executing a command.

[0022]Next, a 2nd embodiment of this invention is described. About what has the same structure as a 1st embodiment, the explanation is omitted by giving the same mark. The 1st flow chart and drawing 6 in which the payment processing method of an IC card [in / in drawing 5 / a 2nd embodiment of this invention] is shown are the 2nd flow chart that shows the payment processing method of the IC card in a 2nd embodiment of this invention.

[0023]First, the terminal 20 (drawing 3) is performed to the display which does not have a predetermined display illustrated, and is urged to a customer that the password for canceling Locke is inputted. On the other hand, if a customer inputs a password, the terminal 20 will send a password to IC card 10, and will require it as a predetermined command canceling Locke. At this time, for example the maximum of the number of times of a drawer is set up at once, it sets the maximum of the amount of a private account as this amount of a drawer, and the terminal 20 sends it to IC card 10. The conditions which can be operated are constituted by each maximum of the aforementioned number of times of a drawer, and the amount of a private account in this embodiment.

[0024]By next, the flag setting means for which CPU11 will not be illustrated if IC card 10 compares the sent password with the password beforehand registered into the aforementioned data memory 14 and both its passwords correspond, While setting up by setting or clearing Flagg 2 in the data memory 14, the lock release means which sets each maximum of the number of times of a drawer and the amount of a private account sent from the terminal 20 as the data memory 14 then by which CPU11 is not illustrated cancels Locke. In this

embodiment, the aforementioned flag setting means sets Flagg 2.

[0025]When both passwords are not in agreement, IC card 10 refuses the demand of a purport which cancels a lock, and ends payment processing. Next, the terminal 20 sends the amount of a drawer to IC card 10, and requires the cash drawer of the electronic money in IC card 10. On the other hand, IC card 10 judges whether each maximum of the aforementioned number of times of a drawer and the amount of a private account is checked, and the aforementioned conditions which can be operated are fulfilled, when Flagg 2 is checked and Flagg 2 is set. And when the aforementioned conditions which can be operated are fulfilled, the maximum of the number of times of a drawer is larger than zero, When the amount of a private account is below the maximum, after updating each maximum of the number of times of a drawer, and the amount of a private account, and only 1 subtracting the maximum of the number of times of a drawer and subtracting the maximum of the amount of a private account by this amount of a private account, a processing means by which CPU11 is not illustrated performs predetermined processing. In this embodiment, the aforementioned processing means pulls out the demanded electronic money.

[0026]And when aforementioned Flagg 2 is cleared, the demanded electronic money is pulled out. A drawer error is answered when the aforementioned conditions which can be operated are not fulfilled (i.e., when the number of times of a drawer is 0 and the amount of a private account is larger than the maximum). And if electronic money can be normally pulled out from IC card 10, the terminal 20 will be required as setting a lock to IC card 10. Then, after IC card 10 sets up a lock by 1st lock setting-out means by which CPU11 is not illustrated, the Flagg release means by which CPU11 is not illustrated cancels it by clearing or setting aforementioned Flagg 2. In this embodiment, the aforementioned Flagg release means clears aforementioned Flagg 2.

[0027]Next, a flow chart is explained.

Step S41 A password is inputted.

Step S42 The terminal 20 is required as canceling Locke of IC card 10.

Step S43 IC card 10 judges whether the sent password and the password beforehand registered into the data memory 14 are in agreement. When a password is in agreement, it progresses to Step S44, and processing is ended when not in agreement.

Step S44 Flagg 2 is set and the maximum of the number of times of a drawer and the amount of a private account is set up.

Step S45 IC card 10 cancels Locke.

Step S46 The terminal 20 is required as pulling out electronic money of IC card 10.

Step S47 IC card 10 checks Flagg 2, and it is judged whether Flagg 2 is set. When Flagg 2 is set and Flagg 2 is not set to Step S48, it progresses to Step S50.

Step S48 IC card 10 has the maximum of the number of times of a drawer larger than zero, and it is judged whether the amount of a private account is below the maximum. The maximum of the number of times of a drawer is larger than zero, and when the amount of a private account is below the maximum, and that is not right to Step S49, it progresses to it at Step S51.

The maximum of the number of times of a drawer and the amount of a private account is updated, only 1 subtracts the maximum of the number of times of a drawer, and step S49 IC card 10 subtracts the maximum of the amount of a private account by this amount of a private

account.

Step S50 IC card 10 pulls out the demanded electronic money.

Step S51 A drawer error is answered.

Step S52 The terminal 20 is required as setting a lock to IC card 10.

Step S53 IC card 10 sets up a lock.

Step S54 Flagg 2 is cleared.

[0028]Thus, in this embodiment, in IC card 10, while the maximum of the number of times of a drawer and the amount of a private account is set up before canceling a lock, the maximum is updated in connection with the cash drawer of electronic money. Therefore, when IC card 10 is wrested where a lock is canceled during payment processing, even if it is going to use an IC card unjustly, Since the demand of the cash drawer of electronic money will be refused if the amount of a private account consists [whether the number of times of a drawer is set to 0, and] of the maximums, IC card 10 is not used unjustly and electronic money is not pulled out unjustly.

[0029]If release of a lock is required, will set up the maximum of the number of times of a drawer at once, and will set the maximum of the amount of a private account as this amount of a drawer, but IC card 10. Another command is generated in the terminal 20 and the original of the maximum of the arbitrary number of times of a drawer and the maximum of the amount of a private account can also be sent to IC card 10 by this command. In that case, when the original of the aforementioned maximum is stored in the data memory 14 and a lock is canceled, IC card 10 can copy the original of the maximum stored in the data memory 14 to the field for a check, and can also use the original of the copied maximum.

[0030]In each aforementioned embodiment, although the IC card with which electronic money was filled up is explained, it is also applicable to other IC cards. This invention is not limited to the aforementioned embodiment, and it is possible to make it change variously based on the meaning of this invention, and it does not eliminate them from the range of this invention.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1]It is a flow chart which shows the payment processing method of the IC card in a 1st embodiment of this invention.

[Drawing 2]It is a flow chart which shows the transaction processing method of the conventional IC card.

[Drawing 3]It is a block diagram showing the payment processing equipment of the IC card in a 1st embodiment of this invention.

[Drawing 4]It is a flow chart which shows the initializing operation of the IC card in a 1st embodiment of this invention.

[Drawing 5]It is the 1st flow chart that shows the payment processing method of the IC card in a 2nd embodiment of this invention.

[Drawing 6]It is the 2nd flow chart that shows the payment processing method of the IC card in a 2nd embodiment of this invention.

[Explanations of letters or numerals]

10 IC card

11 CPU

20 Terminal

DRAWINGS

[Drawing.1]

端末

支払処理開始

暗証番号入力 S21

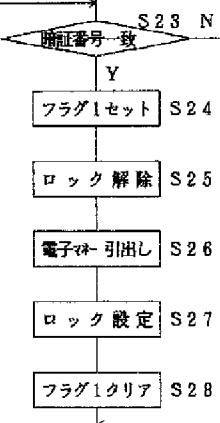
ロック解除、
電子マネー引
出し、ロック
設 定 要 求

S22

ICカード

開 始

S23 N



フ ラ グ 1 セ ッ ト S24

ロ ッ ク 解 除 S25

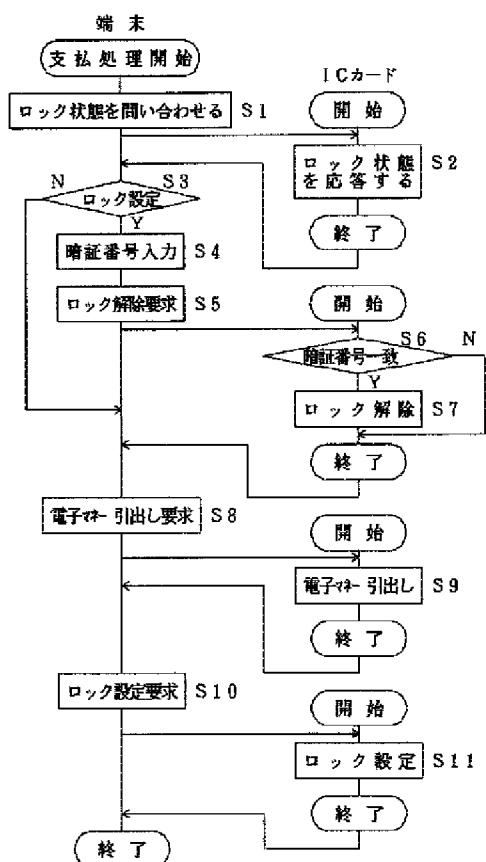
電 子 マ ネ ー 引 出 し S26

ロ ッ ク 設 定 S27

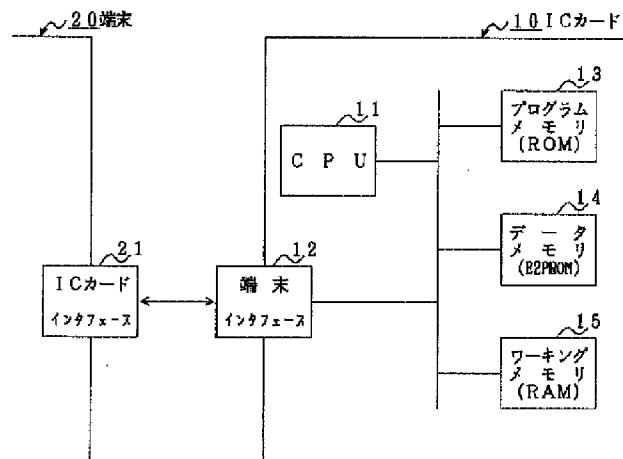
フ ラ グ 1 ク リ ア S28

終 了

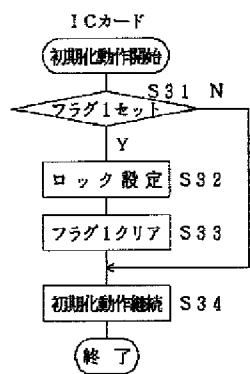
[Drawing.2]



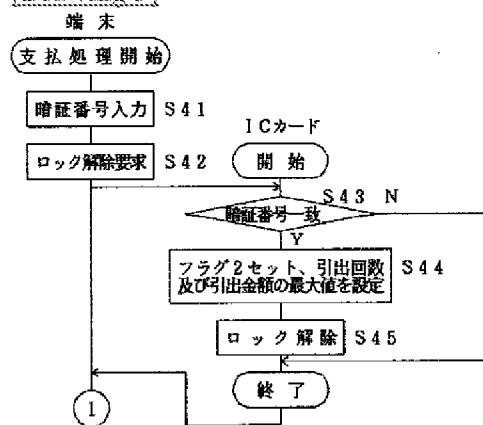
[Drawing 3]



[Drawing 4]



[Drawing 5]



[Drawing 6]

